VI. NATURAL AND CULTURAL RESOURCE MANAGEMENT

NATURAL RESOURCE MANAGEMENT POLICY

The Division of Parks and Recreation's approach to natural resource management is directed by the North Carolina Constitution and the State Parks Act, both of which require the prudent management of natural resources. The constitution sets the overall policy by broadly defining the conservation and protection of natural resources and the acquisition of such resources as a proper function of government. The State Parks Act states that unique archaeological, geological, biological, scenic and recreational resources are a part of the heritage of the people that "... *should be preserved and managed by those people for their use and for the use of their visitors and descendants."*

The North Carolina state parks system plays an important role in maintaining, rehabilitating and perpetuating the state's natural heritage. The natural resources of the state parks system are: high quality, rare or representative examples of natural communities; native plants and animals; geological features and landforms; water resources; and the natural processes that affect these resources. The primary objective in natural resource management will be the protection of natural resources for their inherent integrity and for appropriate types of enjoyment while ensuring their availability for future generations.

It is the Division's policy that natural resources will be managed by allowing natural environments to evolve through natural processes with minimal human influence. Natural resource management will not attempt solely to preserve individual species or processes; rather, it will attempt to maintain all the components and processes of a park's naturally evolving ecosystems. When intervention is necessary, direct or secondary effects on park resources will be minimized to the greatest extent possible. Intervention of natural processes may occur:

1. To correct or compensate for the previous human disruption of natural processes;
2. To protect, restore or enhance rare species and natural communities;
3. To protect, restore or enhance significant archaeological resources;
4. To construct, maintain, improve or protect park facilities; and,
5. To prevent danger to human health or safety around park facilities.

All park facilities will be designed, constructed and maintained to avoid adverse impacts to high quality natural communities, rare plant and animal species, major archaeological sites and other significant natural and cultural resources.

NATURAL AND CULTURAL RESOURCE MANAGEMENT ISSUES

Category	Subcategory	Project Description	Priority[1]
Animal Management	Exotic Species Management	Develop a Feral Hog management Program.	High
	Exotic Species Management	Develop a detection and monitoring program for Hemlock Woolly Adelgid.	Medium
	Inventory Deficiencies	Obtain a copy of the small mammals inventory.	Low
	Nuisance Animal Management	Design trashcans and other trash receptacles to be bear and raccoon proof.	Low
	Nuisance Animal Management	Provide primitive campsites with food storage bins.	Low
	Rare Species Management	Develop a monitoring program for rare species (Timber Rattlesnake, Appalachian Woodrat, Bear, and Green Salamander).	Medium
Botanical Resource Management	Exotic Species Management	Inventory all Park properties for exotic plant species. Inventory should focus on road sites and disturbed areas.	Medium
	Exotic Species Management	Develop a plan to eliminate exotics after inventory has been completed.	Medium
	Inventory Deficiencies	Prepare an inventory for any new land acquisitions.	Medium
	Inventory Deficiencies	Develop a monitoring program for unique natural communities (Rich Cove Forest, Spray Cliffs, etc.)	Medium
	Rare Species Management	Develop a protection plan for the Fraser's loosestrife located near the proposed park entrance road.	High
	Rare Species Management	Monitor populations of Southern Oconee bells various and mosses	Medium
	Restoration/Reintroduction	Prepare a prairie grass restoration plan for Grassy Ridge after road construction is completed.	Low
Cultural Resource Management	Cultural Resource Management	Obtain historical information about the various cemeteries in the park.	Low
	Cultural Resource Management	Obtain historical information on the Indian Camp area.	Low
	Cultural Resource Management	Obtain home Site information.	Low
Infrastructure Management	Environmental Compliance for Planned Construction Projects	Environmental Assessment will be required for the Master Plan.	High
	Facilities Management	Ensure all new facilities are constructed to minimize/eliminate light pollution.	Low
	Road Management	Phase out access to Wildlife Resources Property by way of Auger Hole Road.	High

	Road Management	Prepare a plan to obliterate all old roads not needed by park staff.	High
	Road Management	Add wildlife crossings under roads where necessary.	Low
	Trails Management	Continue to manage all trails for sedimentation and erosion control.	High
Category	**Subcategory**	**Project Description**	**Priority**
Land Use Management	Trails Management	Determine if DPR can restrict kayaking on the Toxaway.	Medium
	Agricultural/Water/Other Leases	Review the issues related to the leased property at Lake Jocassee.	Low
	Buffer Zone to State Park Property	Continue to monitor the boundary around the Cash property.	Medium
	Fire Management	Develop a wildfire management plan for the park.	High
	Fire Management	Develop a prescribed fire management plan for the park.	Medium
	Park boundaries	Complete boundary marking on all existing properties.	Medium
	Rights of Way	Continue to work with the U. S. Forest Service to resolve issues related to access to the Horespasture River.	High
	Rights of Way	Work with Duke Power to provide leave areas near streams.	Medium
	Rights of Way	Ensure that Duke Power does not continue to plant exotics along their right of way.	Medium
	Trash and Debris Disposal	Place signs along Lake Jocasse encouraging all campers to remove their trash.	Low
	Viewshed Management	Monitor viewshed impacts along Bearwallow creek.	Medium
Water Resource Management	Point and non-point pollution sources	Implement a study to determine the impacts of the warm water discharge from Lake Toxaway. Study should include design suggestions for a coldwater discharge from the Lake.	High
	Riparian Buffer Zone Protection	Ensure enforcement and maintenance of all stream buffers both within and close proximity to the park	High
	River bank erosion	Monitor roads and trails to ensure stream bank integrity is maintained.	High
	Water Pollution	Develop a water quality testing program to determine baseline conditions and implement a long-term monitoring program to ensure high water quality within the park	High

1. Explanation of priority codes

High If the resource management activity is not undertaken in the near future there is a distinct possibility that natural resources will be compromised.

Medium Although there is a possibility that resources could be compromised, the priority is not as critical as the high priority projects.

Low Projects with low priority have significantly less chance for compromise of the natural resources if the project is not undertaken in a timely fashion or the project may depend on completion of other projects.

RESOURCE INVENTORY

The southern Blue Ridge escarpment, defined as the Chattooga, Whitewater, Thompson, Horsepasture, Toxaway, and Estatoe river gorges (collectively known as the Jocassee Gorges), has long been recognized by scientists to be an area of biological significance. In the 1960s and 1970s, biological studies of the Jocassee Gorges were completed by scientists funded by a research grant to the Highlands Biological Station (Highlands, NC) from the National Science Foundation. Starting in 1999, new Jocassee Gorges natural resource inventories were funded by the North Carolina Natural Heritage Trust Fund and coordinated by the North Carolina Natural Heritage Program and the North Carolina Division of Parks and Recreation. The purpose of these new surveys was to update and complement the past research, and to provide inventory information in a form functional for the resource management of the Gorges State Park and the Wildlife Resource Commission's Toxaway Gamelands. References to subsequent scientific publications and government and academic reports are provided below. Nearly all documented species records for Gorges State Park have been compiled and recorded in the Division of Parks and Recreation's online Natural Resource Inventory Database. A list of the rare species documented for the park follows.

Gorges State Park Documented Rare Species

Mammal:
Myotis septentrionalis, Northern Long-eared Bat, State Special Concern
Myotis lucifugus, Little Brown Bat, State Watch List
Neotoma floridana haematoreia, Southern Appalachian Woodrat, State Special Concern and Federal Species of Concern
Sylvilagus obscurus, Appalachian Cottontail, State Significantly Rare
Ursus americanus, Black Bear, State Watch List

Bird:
Accipiter cooperii, Cooper's Hawk, State Special Concern
Coragyps atratus, Black Vulture, State Special Concern
Corvus corax, Common Raven, State Watch List
Limnothlypis swainsonii, Swainson's Warbler, State Watch List
Loxia curvirostra, Red Crossbill, State Significantly Rare and Federal Species of Concern

Reptile:
Crotalus horridus horridus, Timber Rattlesnake, State Special Concern

Amphibian:
Aneides aeneus, Green Salamander, State Endangered
Plethodon teyahalee, Southern Appalachian Salamander, State Watch List

Fish:
Etheostoma inscriptum, Turquoise Darter, State Special Concern

Hybopsis rubrifrons, Rosyface Chub, State Threatened
Micropterus coosae, Redeye Bass, State Significantly Rare
Notropis lutipinnis, Yellowfin Shiner, State Special Concern

Invertebrate:
Cambarus chaugaensis, Oconee Stream Crayfish, State Significantly Rare
Tachopteryx thoreyi, Gray Petaltail, State Significantly Rare

Plant:
Asplenium monanthes, Single-sorus spleenwort, State Endangered
Asplenium resiliens, Blackstem spleenwort, State Watch List
Calystegia catesbiana ssp. sericata, Blue Ridge bindweed, State Candidate
Carex pedunculatai, Longstalk sedge, State Candidate
Cypripedium pubescens, Large yellow lady's slipper, State Watch List
Fothergilla major, Large witch-alder, State Candidate
Heuchera parviflora var. parviflora, Grotto alumroot, State Watch List
Houstonia longifolia var. glabra, Granite dome bluet, State Candidate
Huperzia porophila, Rock fir-clubmoss, State Candidate
Juglans cinerea, Butternut, State Watch List
Juncus gymnocarpus, Seep rush, State Watch List
Krigia montana, Mountain cynthia, State Watch List
Lysimachia fraseri, Fraser's loosestrife, State Endangered and Federally Endangered
Monotropsis odorata, Sweet pinesap, State Candidate, Federal Species of Concern
Panax quinquefolius, Ginseng, State Watch List
Philadelphus inodorus, Appalachian mock orange, State Watch List
Sanguisorba canadensis, Canada burnet, State Significantly Rare
Shortia galacifolia var. galacifolia, Southern Oconee bells, State Special Concern and Federal Species of Concern
Smilax biltmoreana, Biltmore carrion-flower, State Candidate
Thermopsis fraxinifolia, Ash-leaved golden banner, State Candidate
Trichomanes petersii, Dwarf filmy-fern, State Threatened
Triphora trianthophora, Three birds orchid, State Watch List
Tsuga caroliniana, Carolina hemlock, State Watch List
Vittaria appalachiana, Appalachian gametophyte, State Watch List
Waldsteinia lobata, Lobed barren-strawberry, State Candidate
Xerophyllum asphodeloides, Beargrass, State Watch List

SOUTHERN BLUE RIDGE ESCARPMENT BIBLIOGRAPHY

Anderson, L.E., and R.H. Zander. 1973. The mosses of the southern Blue Ridge province and their phytogeographic relationships. Journal of the Elisha Mitchell Scientific Society 89(1 and 2): 15-60.

Billings, W.D., and L.E. Anderson. 1966. Some microclimatic characteristics of habitats of endemic and disjunct bryophytes in the southern Blue Ridge. Bryologist 69: 76-95.

Bruce, R.C. 1965. The distribution of amphibians and reptiles on the southeastern escarpment of the Blue Ridge mountains and adjacent piedmont. Journal of the Elisha Mitchell Scientific Society 81(1): 19-24.

Bruce, R.C. 1967. A study of the salamander genus *Plethodon* on the southeastern escarpment of the Blue Ridge mountains. Journal of the Elisha Mitchell Scientific Society 83(2): 74-82.

Bruce, R.C. 1968. The role of the Blue Ridge embayment in the zoogeography of the green salamander, *Aneides aeneus*. Herpetologica 24: 185-194.

Cooper, A.W. 1963. A survey of the vegetation of the Toxaway River Gorge with some remarks about early botanical explorations and an annotated list of the vascular plants of the gorge area. Journal of the Elisha Mitchell Scientific Society 79(1): 1-22.

Cooper, A.W., and J.W. Hardin. 1971. Floristics and vegetation of the gorges on the southern Blue Ridge escarpment. *In* P.C. Holt (ed.). "The Distributional History of the Biota of the Southern Appalachians. Part II. Flora." Res. Div. Monogr. 2. VPI & SU, Blacksburg, VA.

Craft, J.S., and J.C. Morse. 1997. The larvae, pupa and female of *Agapetus jocassee* Morse (Trichoptera : Glossosomatidae). Journal of Entomological Science 32(4): 377-385.

Farrar, D.R. 1967. Gametophytes of four tropical fern genera reproducing independently of their sporophytes in the southern Appalachians. Science 155: 1266-1267.

Floyd, M.A., J.C. Morse and S.C. Harris. 1997. Aquatic Insecta of Lake Jocassee catchment, North and South Carolina. Part II: caddisflies (Trichoptera) of six additional drainages, with a description of a new species. Journal of the Elisha Mitchell Scientific Society 113(3): 133-142.

Fullerton, A.H. 2002. Status Inventory of Uncommon Crayfishes in North Carolina: Final Report 2001: Savannah, French Broad, & Lumber (Waccamaw) river basins. NC Wildlife Resources Commission. Raleigh, NC.

Grand, L.F., J.A. Menge and J.J. Bond. 1975. Partial checklist of fungi from Highlands, North Carolina and vicinity. Journal of the Elisha Mitchell Scientific Society 91(4): 221-229.

Ivey, M., and J.D. Pittillo. 2000. Rare Vascular Plants in and Around Gorges State Park. Final report to NC Natural Heritage Program. Western Carolina University, Cullowhee, NC.

Johnston, D.W. 1967. Ecology and distribution of mammals at Highlands, North Carolina. Journal of the Elisha Mitchell Scientific Society 83(2): 88-98.

Johnston, D.W. 1964. The birds of Highlands, North Carolina, with a preliminary list from Cashiers and nearby gorges. Journal of the Elisha Mitchell Scientific Society 80(1): 29-38.

Julius, P.W. 1998. Avian community composition and density of ten forest types within the southeastern Blue Ridge escarpment. M.S. thesis. Western Carolina University, Cullowhee, NC.

Lambiase, S.J. 2000. Amphibian Survey of the Toxaway, Horsepasture, and Bearwallow Gorges. N.C. Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment and Natural Resources. Raleigh, NC. 30pp.

Lambiase, S.J. 2000. Terrestrial Mollusk Survey of the Toxaway, Horsepasture, and Bearwallow Gorges. NC Natural Heritage Program, Division of Parks and Recreation, NC Department of Environment and Natural Resources. Raleigh, NC. 15pp.

Lambiase, S.J., M.K. Clark and L.J. Gatens. 2001. Bat (Chiroptera) Survey of North Carolina State Parks, 1999-2001. NC Natural Heritage Program, Division of Parks and Recreation, NC Department of Environment and Natural Resources. Raleigh, NC.

Losch, C.K., R.J. McCraken, and C.B. Davey. 1970. Soils of steeply sloping landscapes in the southern Appalachian mountains. Soil Sci. Society Amer. Proc. 34: 473-478.

McIntyre, H.K. 1967. Environmental influences on animal populations in decaying logs of the Blue Ridge escarpment gorges. M.S. thesis. University of Georgia, Athens, GA.

Morse, J.C., S.W. Hamilton, and K.M. Hoffman. 1989. Aquatic insects of Lake Jocassee catchment in North and South Carolina, with descriptions of four new species of caddisflies (Trichoptera). Journal of the Elisha Mitchell Scientific Society 105: 14-33.

Mowbray, T.B. 1964. Vegetational gradients in the Bearwallow Gorge of the Blue Ridge escarpment. Thesis. Duke University, Durham, NC.

Mowbray, T.B. 1966. Vegetational gradients in the Bearwallow Gorge of the Blue Ridge escarpment. Journal of the Elisha Mitchell Scientific Society 82(2): 138-149.

Mowbray, T.B., and H.J. Oosting. 1968. Vegetation gradients in relation to environment and phenology in a southern Blue Ridge gorge. Ecological Monographs 38: 309-344.

North Carolina Department of Natural Resources and Community Development. 1984. Horsepasture River: a report on the qualifications of Horsepasture River for designation into the North Carolina Natural and Scenic River System.

Parnell, J.F., and T.L. Quay. 1964. The summer birds of the Toxaway River Gorge of southwestern North Carolina. Wilson Bulletin 76: 138-146.

Paul, J.R., and T.L. Quay. 1963. Notes on the mammalian fauna of the Toxaway River Gorge, North Carolina. Journal of the Elisha Mitchell Scientific Society 79(2): 124-126.

Phillips, R. 2000. Classification and predictive modeling of plant communities in the Gorges State Park and Gamelands, North Carolina. Thesis. North Carolina State University, Raleigh, NC. 68 pp.

Racine, C.H. 1965. Pine Ridge communities in the Thompson River area of the Blue Ridge escarpment. Thesis. Duke University, Durham, NC.

Racine, C.H. 1966. Pine communities and their site characteristics in the Blue Ridge escarpment. Journal of the Elisha Mitchell Scientific Society 82(2): 172-181.

Robinson, J.L., and P.S. Rand. 2001. Fish and Aquatic Macroinvertebrate Community Survey and Stream Habitat Assessment in Jocassee Gorges State Park, North Carolina. Final report to NC Natural Heritage Program. NC State University, Raleigh, NC.

Rodgers, C.L. 1965. The vegetation of Horsepasture Gorge. Journal of the Elisha Mitchell Scientific Society 81(2): 103-112.

Rodgers, C.L., and R.E. Shake. 1965. Survey of vascular plants in Bearcamp Creek watershed. Castanea 30(3): 149-166.

Sargent, R. 1977. Biology in the Blue Ridge: Fifty Years of the Highlands Biological Station, 1927-1977. Highlands Biological Foundation, Highlands, NC.

Schmidt, J.P. 1994. Diversity of mesic forest floor herbs within forests on the Blue Ridge plateau (USA): the role of the Blue Ridge escarpment as a refugium for disturbance sensitive species. M.S. thesis. University of Georgia, Athens, GA.

Tenney, W.R., and W.S. Woolcott. 1966. The occurrence and ecology of freshwater bryozoans in the headwaters of the Tennessee, Savannah, and Saluda River systems. Trans. American Micro. Society 82: 241-245.

Wagner, W.H. Jr., D.R. Farrar, B.W. McAlpin. 1970. Pteridology of the Highlands Biological Station area, southern Appalachians. Journal of the Elisha Mitchell Scientific Society 86(1): 1-27.

Walker, L.C. 1964. Humus types of the Highlands area of North Carolina. Journal of the Elisha Mitchell Scientific Society 80(1): 24-29.

Ware, D.M.E. 1973. Floristic survey of Thompson River watershed. Castanea 38: 349-378.

Ware, D.M.E. 1984. Mountain memoirs: botanizing in a Blue Ridge gorge. The Association of Southeastern Biologists Bulletin 31(4): 127-131.

03/04